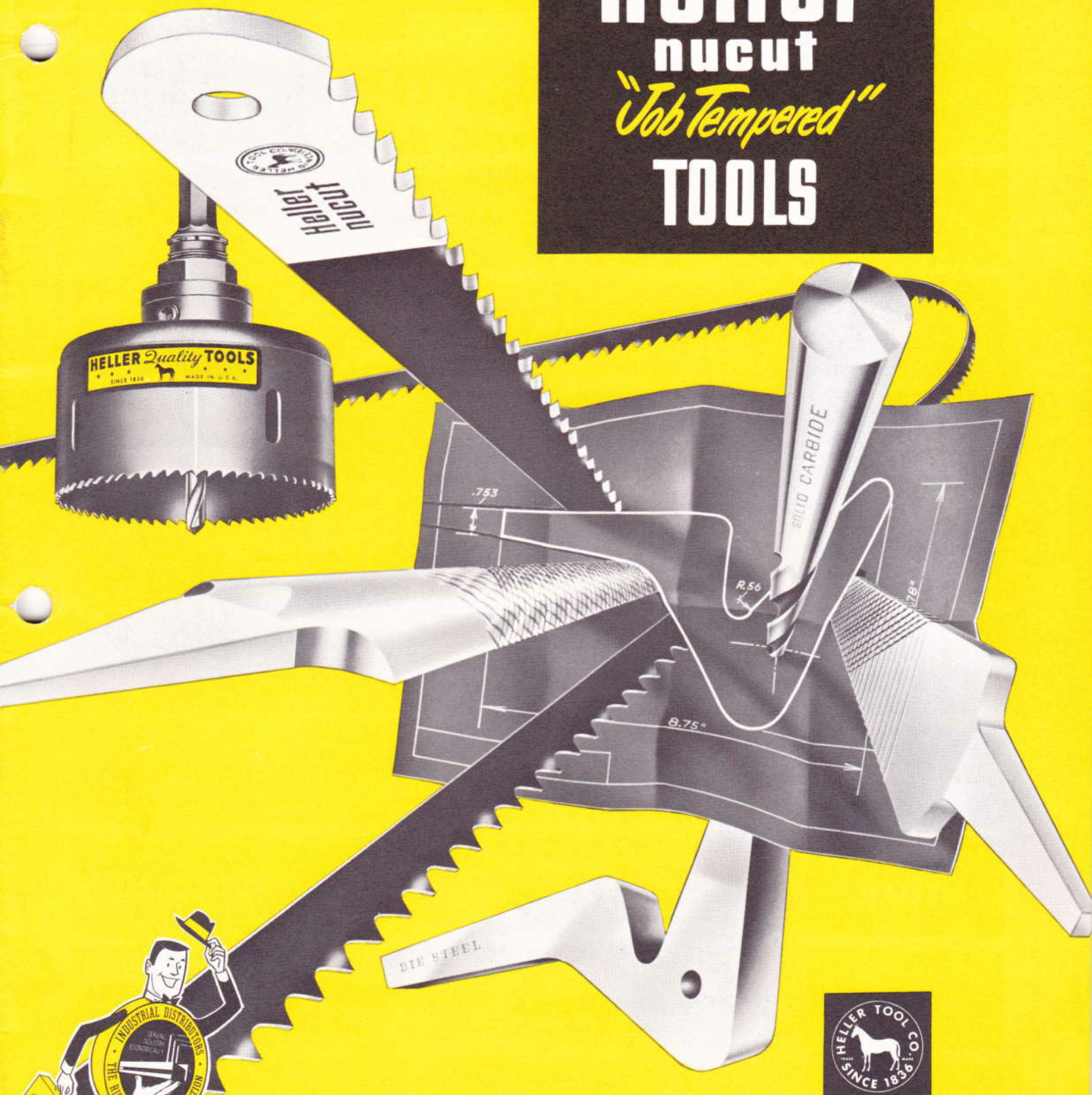


Heller nucut *"Job Tempered"* TOOLS



INDEX

OF "Job Tempered" TOOLS

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HELLER TOOL CO.



America's Oldest File Manufacturer
NEWCOMERTOWN, OHIO
Subsidiary of Simonds Saw and Steel Co.

HELLER NUCUT®

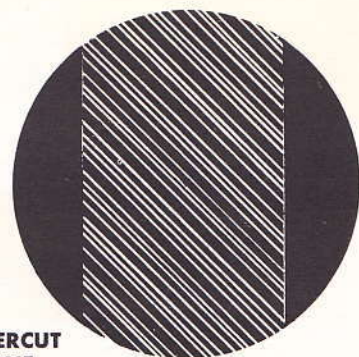
AMERICAN PATTERN FILES with double-acting "Wavy-Teeth"

The Heller Nucut "Wavy Teeth" principle is one of the most important advances in file history.

Nucut files combine fine and coarse teeth by a planned irregularity. In one area of the file's working face, the rows of teeth are spaced progressively wider by regular increments of spacing. In another area, teeth are spaced progressively narrower by regular decrements of spacing.

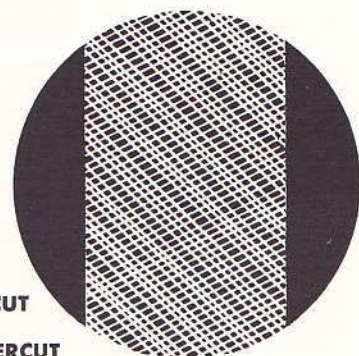
The result is the well-known patented "Wavy Teeth" design. Nucut Files cut faster, smoother, without chattering. They are also more durable, longer lasting. Every Nucut file is heat treated and hardened precisely under electrical control.

Nucut Files work equally well on steel, iron, aluminum, brass, bronze, copper, slate, wood and most other materials.



**OVERCUT
ALONE**

The overcut creates a pattern of coarse and fine teeth.



**UPCUT
and
OVERCUT**

When the upcut is added, the "Wavy-Teeth" design is created with larger cutting teeth and smaller cleaning teeth.

mill and saw files



MILL FILES

SIZE	CUT	SIZE	CUT
4" x $\frac{7}{16}$ " x $\frac{5}{64}$ "	B-2-S	10" x $\frac{3}{32}$ " x $\frac{1}{64}$ "	C-B-2-S
6" x $\frac{1}{32}$ " x $\frac{7}{64}$ "	C-B-2-S	12" x $\frac{1}{32}$ " x $\frac{3}{32}$ "	C-B-2-S
7" x $\frac{1}{16}$ " x $\frac{1}{8}$ "	B	14" x $\frac{1}{16}$ " x $\frac{1}{4}$ "	C-B-2-S
8" x $\frac{2}{32}$ " x $\frac{3}{64}$ "	C-B-2-S	16" x $\frac{1}{4}$ " x $\frac{3}{32}$ "	B

1 ROUND Made in 6", 8", 10" and 12" Bastard Cut Only
2 ROUND Made in 6", 8", and 10" EDGES Bastard Cut Only



SPECIAL CROSSCUT FILES

SIZE	SIZE	SIZE
6" x $\frac{1}{32}$ " x $\frac{7}{64}$ "	7" x $\frac{1}{16}$ " x $\frac{1}{8}$ "	10" x $\frac{3}{32}$ " x $\frac{1}{64}$ "
	8" x $\frac{2}{32}$ " x $\frac{3}{64}$ "	



BANDSAW (BLUNT) FILES

SIZE (REG)	SIZE (SLIM)
6" x $\frac{1}{32}$ "	6" x $\frac{3}{16}$ "
8" x $\frac{1}{32}$ "	8" x $\frac{1}{32}$ "



CANTSAW FILES

SIZE	SIZE
6" x $\frac{1}{32}$ " x $\frac{1}{64}$ "	8" x $\frac{1}{16}$ " x $\frac{3}{32}$ "
7" x $\frac{3}{64}$ " x $\frac{1}{4}$ "	10" x $\frac{1}{16}$ " x $\frac{1}{32}$ "



CROSSCUT FILES

SIZE	SIZE	SIZE
6" x $\frac{1}{16}$ " x $\frac{1}{32}$ "	8" x $\frac{1}{16}$ " x $\frac{3}{32}$ "	10" x $\frac{1}{16}$ " x $\frac{3}{64}$ "



REGULAR TAPER FILES

SIZE	SIZE	SIZE
6" x $\frac{1}{32}$ "	7" x $\frac{1}{32}$ "	10" x $\frac{2}{32}$ "
	8" x $\frac{1}{32}$ "	



SLIM TAPER FILES

SIZE	SIZE	SIZE
4" x $\frac{7}{32}$ "	6" x $\frac{1}{32}$ "	8" x $\frac{1}{32}$ "
5" x $\frac{7}{32}$ "	7" x $\frac{1}{32}$ "	10" x $\frac{7}{32}$ "



EXTRA SLIM TAPER FILES

SIZE	SIZE	SIZE
4" x $\frac{3}{16}$ "	5 $\frac{1}{2}$ " x $\frac{1}{4}$ "	7" x $\frac{3}{16}$ "
5" x $\frac{1}{64}$ "	6" x $\frac{1}{32}$ "	8" x $\frac{1}{32}$ "



DOUBLE EXTRA SLIM TAPER FILES

SIZE	SIZE	SIZE
4" x $\frac{7}{32}$ "	6" x $\frac{7}{32}$ "	7" x $\frac{1}{4}$ "
5" x $\frac{3}{16}$ "		8" x $\frac{3}{16}$ "



DOUBLE ENDER FILES

SIZE	SIZE	SIZE
6" x $\frac{1}{32}$ "	8" x $\frac{1}{32}$ "	9" x $\frac{1}{32}$ "
7" x $\frac{1}{32}$ "		10" x $\frac{3}{8}$ "

ALL ABOVE FILES AVAILABLE IN SINGLE CUT AS WELL AS WAVY TEETH

HELLER NUCUT®



GULLET SPECIAL

SIZE
8" x 3/16"

SIZE
10" x 3/16"



DADO FILE

SIZE
10" x 3/16"



HAND SAW SPECIAL

SIZE
5 1/2" x 1/4"

SIZE
6" x 3/32"

SIZE
7" x 11/32"



NARROW BAND SAW SPECIAL

NO. 2
SIZE
8" x 3/16"

NO. 3
SIZE
6" x 1/2"
7" x 1/2"

NO. 4 5 6
SIZE
6" x 3/8"
7" x 1/32"



SAW BIT SPECIAL

SIZE
8" x 13/16" x 3/32"

chain saw files



ROUND CHAIN SAW FILES

SIZE	CUT	SIZE	CUT
8" x 3/16"	SMOOTH DC	8" x 3/32"	SMOOTH DC
8" x 3/32"	SMOOTH DC	8" x 3/16"	SMOOTH DC
8" x 1/4"	SMOOTH DC	8" x 3/8"	SMOOTH DC



MILL CHAIN SAW FILES—2 ROUND EDGES

SIZE	NO.	CUT
8" x 5/8" x 3/32"	3084	SC



BEVELED EDGE CHAIN SAW FILE

SIZE	NO.
7" x 1/2" x 3/16"	4680

machinists' files

C - COARSE
B - BASTARD
2 - SECOND
S - SMOOTH



FLAT FILES

SIZE	CUT	SIZE	CUT
4" x 15/32" x 3/32"	B-2-S	12" x 1 5/32" x 3/32"	C-B-2-S
6" x 3/8" x 3/32"	C-B-2-S	14" x 1 11/32" x 3/16"	C-B-2-S
8" x 7/32" x 3/32"	C-B-2-S	16" x 1 15/32" x 11/32"	B-2-S
10" x 11/32" x 1/4"	C-B-2-S	18" x 1 11/16" x 3/8"	B



HAND FILES

SIZE	CUT	SIZE	CUT
6" x 3/8" x 3/32"	B-2-S	12" x 1 5/32" x 3/32"	B-2-S
8" x 7/32" x 3/32"	B-2-S	14" x 1 11/32" x 3/16"	B-2-S
10" x 11/32" x 1/4"	B-2-S		



PILLAR FILES

SIZE	CUT	SIZE	CUT
6" x 3/16" x 3/32"	B-2-S	12" x 25/32" x 13/32"	B
8" x 3/16" x 3/32"	B-2-S	14" x 25/32" x 13/32"	B
10" x 21/32" x 11/32"	B-2-S		



HALF ROUND FILES

SIZE	CUT	SIZE	CUT
4" x 3/16" x 1/8"	B-2-S	12" x 1 1/8" x 11/32"	C-B-2-S
6" x 15/32" x 3/32"	C-B-2-S	14" x 1 5/32" x 13/32"	C-B-2-S
8" x 3/4" x 3/32"	C-B-2-S	16" x 1 13/32" x 13/32"	B-S
10" x 15/16" x 3/32"	C-B-2-S		



THREE SQUARE FILES

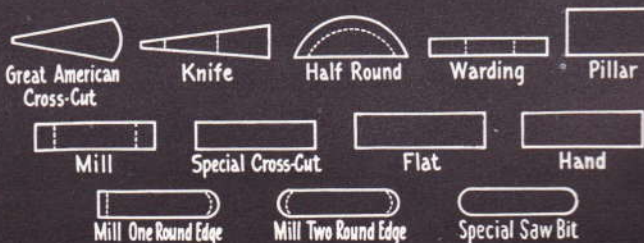
SIZE	CUT	SIZE	CUT
6" x 15/32"	B-2-S	10" x 3/4"	B-2-S
8" x 3/8"	B-2-S	12" x 27/32"	B



ROUND FILES

SIZE	CUT	SIZE	CUT
4" x 3/32"	B-2-S	8" x 3/16"	B-2-S
6" x 7/32"	B-2-S	10" x 3/8"	B-2-S
7" x 17/64"	B	12" x 1/2"	B-2-S
		14" x 5/8"	B-2-S
		16" x 3/4"	B

CROSS SECTIONAL VIEWS OF COMMONLY USED FILES



American Pattern

FILES

SQUARE FILES

SIZE	CUT	SIZE	CUT	SIZE	CUT
4" x $\frac{5}{32}$ "	B-2-S	8" x $\frac{3}{16}$ "	C-B-2-S	14" x $\frac{3}{8}$ "	C-B-2-S
6" x $\frac{1}{32}$ "	C-B-2-S	10" x $\frac{3}{16}$ "	C-B-2-S	16" x $\frac{3}{4}$ "	B
		12" x $\frac{1}{2}$ "	C-B-2-S		

WARDING FILES

SIZE	CUT	SIZE	CUT
4" x $\frac{15}{32}$ " x $\frac{3}{64}$ "	B-2-S	8" x $\frac{25}{32}$ " x $\frac{3}{32}$ "	B-2-S
6" x $\frac{5}{8}$ " x $\frac{3}{64}$ "	B-2-S	10" x $\frac{15}{16}$ " x $\frac{1}{8}$ "	B-2-S
		12" x $1 \frac{3}{4}$ " x $\frac{3}{64}$ "	B

KNIFE FILES

SIZE	CUT	SIZE	CUT
4" x $\frac{15}{32}$ " x $\frac{7}{64}$ "	B-2-S	8" x $\frac{27}{32}$ " x $\frac{3}{16}$ "	B-2-S
6" x $\frac{21}{32}$ " x $\frac{3}{32}$ "	B-2-S	10" x $1 \frac{1}{2}$ " x $\frac{1}{4}$ "	B-2-S

MULTI-KUT FILES

FLAT SIZE	HALF ROUND SIZE	SQUARE SIZE
8" x $25 \frac{3}{32}$ " x $7 \frac{3}{32}$ "	8" x $3 \frac{1}{4}$ " x $7 \frac{3}{32}$ "	8" x $5 \frac{1}{16}$ "
10" x $31 \frac{3}{32}$ " x $1 \frac{1}{4}$ "	10" x $15 \frac{1}{16}$ " x $9 \frac{3}{32}$ "	10" x $3 \frac{1}{8}$ "
12" x $1 \frac{5}{32}$ " x $9 \frac{3}{32}$ "	12" x $1 \frac{1}{8}$ " x $11 \frac{3}{32}$ "	12" x $1 \frac{1}{2}$ "
14" x $1 \frac{11}{32}$ " x $5 \frac{1}{16}$ "	14" x $1 \frac{9}{32}$ " x $13 \frac{3}{32}$ "	14" x $5 \frac{1}{8}$ "

special purpose files

FLAT FOUNDRY FILES

HALF ROUND FOUNDRY FILES

FOUNDRY FILES

FLAT FOUNDRY FILES SIZE	HALF ROUND FOUNDRY FILES SIZE
8" x $\frac{25}{32}$ " x $\frac{7}{32}$ "	8" x $\frac{3}{4}$ " x $\frac{7}{32}$ "
10" x $\frac{31}{32}$ " x $\frac{1}{4}$ "	10" x $\frac{15}{16}$ " x $\frac{9}{32}$ "
12" x $1 \frac{5}{32}$ " x $\frac{9}{32}$ "	12" x $1 \frac{1}{8}$ " x $\frac{11}{32}$ "
14" x $1 \frac{11}{32}$ " x $\frac{5}{16}$ "	14" x $1 \frac{9}{32}$ " x $\frac{13}{32}$ "

LONG ANGLE LATHE FILES

SIZE	SIZE	SIZE
10" x $\frac{31}{32}$ " x $\frac{1}{4}$ "	12" x $1 \frac{5}{32}$ " x $\frac{9}{32}$ "	14" x $1 \frac{11}{32}$ " x $\frac{5}{16}$ "

FLAT ALUMINUM

HALF ROUND ALUMINUM

ALUMINUM FILES—TYPE A

FLAT ALUMINUM SIZE	HALF ROUND ALUMINUM* SIZE
6" x $\frac{5}{32}$ " x $\frac{3}{32}$ "	6" x $\frac{15}{32}$ " x $\frac{3}{32}$ "
8" x $\frac{25}{32}$ " x $\frac{7}{32}$ "	8" x $\frac{3}{4}$ " x $\frac{7}{32}$ "
10" x $\frac{31}{32}$ " x $\frac{1}{4}$ "	10" x $\frac{15}{16}$ " x $\frac{9}{32}$ "
12" x $1 \frac{5}{32}$ " x $\frac{9}{32}$ "	12" x $1 \frac{1}{8}$ " x $\frac{11}{32}$ "

*NOTE: 6", 8" and 10" have narrow point. See brass file.

FLAT LEAD FLOAT

HALF ROUND LEAD FLOAT

LEAD FLOAT FILES

FLAT LEAD FLOAT SIZE	HALF ROUND LEAD FLOAT SIZE
8" x $\frac{25}{32}$ " x $\frac{7}{32}$ "	8" x $\frac{3}{4}$ " x $\frac{7}{32}$ "
10" x $\frac{31}{32}$ " x $\frac{1}{4}$ "	10" x $\frac{15}{16}$ " x $\frac{9}{32}$ "
12" x $1 \frac{5}{32}$ " x $\frac{9}{32}$ "	12" x $1 \frac{1}{8}$ " x $\frac{11}{32}$ "

BRASS FILES (half round only)

SIZE
8" x $\frac{3}{4}$ " x $\frac{7}{32}$ "
10" x $\frac{15}{16}$ " x $\frac{9}{32}$ "
12" x $1 \frac{1}{8}$ " x $\frac{11}{32}$ " — Has blunt point. See Aluminum File.

MACHINISTS' SCRAPER

NUMBER	SIZE	NUMBER	SIZE
3144	5" x $\frac{15}{32}$ "	3147	5" x $\frac{3}{16}$ "
3145	6" x $\frac{1}{2}$ "	3148	6" x $\frac{11}{32}$ "
3146	7" x $\frac{9}{16}$ "	3149	7" x $\frac{13}{32}$ "
		3234	8" x $\frac{1}{2}$ "

DOCTOR BLADE FILES

NUMBER	SIZE	CUT
381	#381—14" x $1 \frac{15}{16}$ " x $\frac{5}{32}$ "	2

AUGER BIT FILES

SIZE
7" x $1 \frac{1}{32}$ " x $\frac{1}{16}$ "

CABINET FILES

SIZE	SIZE	SIZE
8" x $\frac{7}{16}$ " x $\frac{3}{16}$ "	10" x $1 \frac{1}{8}$ " x $\frac{7}{32}$ "	12" x $1 \frac{1}{16}$ " x $\frac{1}{4}$ "

FLAT WOOD FILES

HALF ROUND WOOD FILES

WOOD FILES

FLAT WOOD FILES SIZE	HALF ROUND WOOD FILES SIZE
8" x $\frac{25}{32}$ " x $\frac{7}{32}$ "	8" x $\frac{3}{4}$ " x $\frac{7}{32}$ "
10" x $\frac{31}{32}$ " x $\frac{1}{4}$ "	10" x $\frac{15}{16}$ " x $\frac{9}{32}$ "
12" x $1 \frac{5}{32}$ " x $\frac{9}{32}$ "	12" x $1 \frac{1}{8}$ " x $\frac{11}{32}$ "
14" x $1 \frac{11}{32}$ " x $\frac{5}{16}$ "	14" x $1 \frac{9}{32}$ " x $\frac{13}{32}$ "

rasps

FLAT WOOD RASPS

HALF ROUND WOOD RASPS

FLAT WOOD RASPS CUT	SIZE	CUT
B	12" x $1 \frac{5}{32}$ " x $\frac{13}{32}$ "	B
B	14" x $1 \frac{11}{32}$ " x $\frac{15}{32}$ "	B
HALF ROUND WOOD RASPS CUT	SIZE	CUT
B	12" x $1 \frac{5}{32}$ " x $\frac{7}{16}$ "	B-S
B-S	14" x $1 \frac{11}{32}$ " x $\frac{1}{2}$ "	B
B-S	16" x $1 \frac{13}{32}$ " x $\frac{9}{16}$ "	B



CABINET RASPS

SIZE	CUT	SIZE	CUT
6" x 1 1/16" x 3/16"	2	12" x 1 1/32" x 1/32"	2-S
8" x 3/32" x 1/4"	2-S	14" x 1 1/16" x 3/8"	2
10" x 1 1/4" x 3/32"	2-S		



SHOE RASPS

SIZE	CUT	SIZE	CUT
8" x 7/8" x 3/32"	ALL SPECIAL COMB.	10" x 1 1/16" x 1/32"	ALL SPECIAL COMB.
9" x 3/32" x 3/16"			



HORSE RASPS

PLAIN HORSE RASPS—REGULAR	TANGED RASPS—REGULAR	14" TANGED "RACE TRAK" RASP
SIZE	SIZE	SIZE
12" x 1 3/16" x 1/32"	14" x 1 3/4" x 7/16"	14" x 1 3/4" x 3/32"
14" x 1 1/2" x 3/8"	16" x 1 7/8" x 1/32"	
16" x 1 1/32" x 1/16"		
PLAIN HORSE RASPS—SLIM PATTERN	TANGED RASPS—THIN PATTERN	18" PLAIN "RACE TRAK" RASP
SIZE	SIZE	SIZE
18" x 1 1/16" x 1/32"	14" x 1 3/4" x 1/32"	18" x 1 3/16" x 1/32"

ignition files



5" PATENTED TUNGSTEN POINT FILES (POCKET CLIP)



5" REGULAR TUNGSTEN POINT FILES



5" VOLTAGE REGULATOR FILES No. 2470



6" VOLTAGE REGULATOR RIFFLERS No. 1997

Clip handle fits over pocket flap for easy carrying. A necessary tool for every auto mechanic. Used for cleaning spark plugs and dressing contact points. Packed in boxes containing a dozen files. Also mounted on cards (one dozen to a card).

For cleaning distributor points and spark plugs. Also used in cleaning contact points of magnetos, switches, electric bells, etc. Made with chisel tip for entering gaps and slots. Packed in boxes containing one dozen files and also mounted on cards (one dozen files to a card).

For voltage regulators, circuit breakers, relay and other electrical contact points requiring an extra-thin file with fine cut and smooth finish. 5" over-all—3/16" wide, approximately .020" thick. Packed on counter display cards only, one dozen on card—twelve cards to a carton.

Recommended for removing pits and corrosion from contact points and also for filing them to a smooth finish. Length 6" over-all. Packaged on counter display cards only. One dozen on card—twelve cards to carton.

all purpose files



ROTARY MOWER and GARDEN TOOL

SIZE 7" x 3/4" x 1/8"



FARMER'S OWN

SIZE 8" x 3/32" x 1/64"

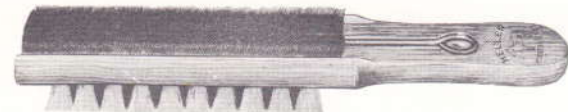


ALL PURPOSE FILES

SIZE
8" x 3/32" x 3/16"
10" x 3/32" x 3/16"

SIZE
12" x 1 3/32" x 3/32"
14" x 1 1/32" x 3/16"

file cards



When file teeth are clogged with filings—slipping, scratching and inefficient cutting result. Clean your coarse file frequently with a file card (specially designed fine wire brush), and use the brush on your fine cut file. The combination file card and brush provides both card and brush, with a specially designed pick, in one handy cleaning tool.

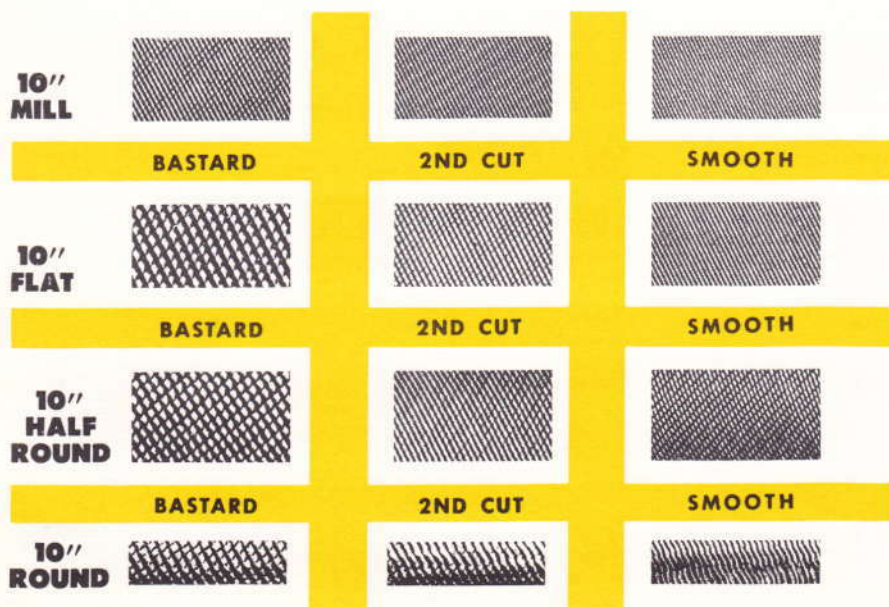
file handles



SIZES

- #104 4" for small files
- #106 4 1/2" for files 4" to 6"
- #108 5" for files 6" to 10"
- #110 5 1/2" for files 8" to 12"
- #112 6" for files 12" to 18"

Standard carton contains 1/4 gross of a size. A handle should always be used on a tanged file. A properly fitted handle means quicker, better work, and makes the job easier and safer. Heller handles are manufactured of soft wood and readily absorb hand moisture. Long shank steel ferrule prevents splitting.



STANDARD TOOTH CUTS

The illustrations at left serve only to show a cut comparison between four various types of ten-inch files. Bear in mind that the coarse cut illustrated for any ten-inch file would not be the same degree of coarseness as that found on the same file in a six-inch length. However, the same relative difference always exists between Bastard, Second Cut and Smooth Cut for any file in any particular length.

HELLER

American-Swiss®

SWISS PATTERN FILES

Swiss Pattern files are the delicate cutting instruments of precision craftsmen — jewelers, die-makers, gunsmiths, watchmakers and many others. Wherever it's necessary to finish delicate and intricate parts, Swiss Pattern files do the job better, quicker.

Swiss Pattern files are slender. They are narrower in both width and thickness than

other type files and the tapered files have fine points. Teeth extend to the extreme edges and much finer cuts are available than on any other files.

The Heller American-Swiss Swiss Pattern files are the finest available. This well-known brand has met the test of industrial users and the complete selection assures exactly the right file for any job.

COMPARISON OF CUTS

Cuts shown are those of a 6" file. On longer files cuts are coarser; on shorter files cuts are finer.



6" No. 2
84 teeth per inch



6" No. 00
34 teeth per inch



6" No. 0
50 teeth per inch



6" No. 1
66 teeth per inch



6" No. 3
102 teeth per inch



6" No. 4
120 teeth per inch



6" No. 6
184 teeth per inch



HAND FILES

SIZE	CUT	SIZE	CUT
3" x 3/16 x 3/16	0,2,4	8" x 23/32 x 3/16	00,0,1,2,3,4,6
4" x 13/32 x 3/16	00,0,1,2,3,4	10" x 1 1/16 x 3/32	00,0,1,2,4
6" x 23/32 x 3/32	00,0,1,2,3,4,6	12" x 1 3/32 x 1/4	00,0,2,4



PILLAR TESTING FILES

SIZE	CUT	SIZE	CUT
6" x 13/32 x 3/16	0,1	8" x 23/64 x 13/64	0,1



PILLAR FILES

SIZE	CUT	SIZE	CUT
3" x 13/64 x 3/64	00,0,2,3,4	8" x 23/64 x 13/64	00,0,1,2,3,4
4" x 23/64 x 3/64	00,0,1,2,3,4,5	10" x 47/64 x 13/64	00,0,1,2,4
6" x 13/32 x 3/64	00,0,1,2,3,4	12" x 23/64 x 13/64	00,0,1,2



NARROW PILLAR FILES

SIZE	CUT	SIZE	CUT
3" x 3/32 x 3/64	0,1,2,4,6	8" x 23/64 x 13/64	00,0,1,2,3,4
4" x 3/32 x 3/64	00,0,1,2,3,4,6	10" x 3/16 x 13/64	00,0,1,2,4
6" x 23/64 x 3/64	00,0,1,2,3,4,6	12" x 3/8 x 3/16	00,0,1,2



EXTRA NARROW PILLAR FILES

SIZE	CUT	SIZE	CUT
3" x 3/64 x 3/32	00,0,1,2,3,4,6	8" x 3/16 x 13/64	00,0,1,2,3,4
4" x 13/64 x 3/64	00,0,1,2,3,4,6	10" x 3/8 x 13/64	00,0,1,2,4
6" x 1/4 x 3/64	00,0,1,2,3,4,6	12" x 3/16 x 1/4	00,0,2

Additional Widths — Extra Narrow Pillar Files

SIZE	CUT	SIZE	CUT
6" x 3/8 x 3/64	00,0,2,3,4,6	6" x 3/8 x 3/64	00,0,2,3,4



HALF-ROUND FILES

SIZE	CUT	SIZE	CUT
3" x 3/32 x 3/32	00,0,1,2,3,4	6" x 23/64 x 3/64	00,0,1,2,3,4,6
4" x 3/8 x 3/64	00,0,1,2,3,4	8" x 43/64 x 3/16	00,0,1,2,3,4
5" x 3/16 x 3/64	00,0,1,2,3,4	10" x 13/16 x 13/64	00,0,1,2,3,4
		12" x 1 1/64 x 3/16	00,0,2



CROSSING FILES

SIZE	CUT	SIZE	CUT
3" x 3/16 x 3/32	00,0,2,4	8" x 3/16 x 1/4	00,0,1,2,4
4" x 3/16 x 3/8	00,0,1,2,4	10" x 23/32 x 3/32	0,2
6" x 3/8 x 3/16	00,0,1,2,3,4,6		



KNIFE FILES

SIZE	CUT	SIZE	CUT
4" x 23/64 x 3/64	00,0,1,2,4	6" x 23/32 x 3/32	00,0,1,2,4
		8" x 23/32 x 3/16	00,0,1,2,4



WARDING FILES

SIZE	CUT	SIZE	CUT
3" x 1/32 x 1/32	00,0,2,4	8" x 1/32 x 3/32	00,0,2,4
4" x 1/16 x 3/64	00,0,2,4	10" x 1/16 x 3/64	00,0,2
6" x 1/32 x 3/64	00,0,2,4		



EQUALLING FILES

SIZE	CUT	SIZE	CUT
3" x 1/16 x 1/16	00,0,2,4	6" x 1/32 x 3/64	00,0,2,4
4" x 1/32 x 3/64	00,0,2,4	8" x 3/64 x 3/64	00,0,2,4

WARDING AND EQUALLING FILES MAY BE OBTAINED IN MINIMUM QUANTITIES OF ONE DOZEN IN CERTAIN B & S GAUGES.



BARRETTE FILES

SIZE	CUT	SIZE	CUT
3" x 3/8	00,0,1,2,4	6" x 1/32	00,0,1,2,4
4" x 1/2	00,0,1,2,4	8" x 3/8	00,0,2,4



PIPPIN FILES

SIZE	CUT	SIZE	CUT
4" x 1/32 x 1/8	00,0,2	8" x 1/2 x 1/32	00,0,2
6" x 1/32 x 1/32	00,0,2		



CROCHET FILES

SIZE	CUT	SIZE	CUT
3" x 1/64 x 3/64	00,0,2	8" x 1/16 x 5/32	00,0,1,2
4" x 3/64 x 3/32	00,0,2,4	10" x 1/16 x 3/16	00,0,2
6" x 3/64 x 1/8	00,0,1,2,4		



SQUARE FILES

SIZE	CUT	SIZE	CUT
3" x 1/16	0,2,3,4	8" x 1/64	00,0,1,2,4
4" x 3/64	00,0,1,2,3,4	10" x 1/64	00,0,2,4
6" x 3/32	00,0,1,2,3,4		



TAPER ROUND FILES

SIZE	CUT	SIZE	CUT
3" x 3/32	00,0,1,2,3,4,6	8" x 1/4	00,0,1,2,3,4
4" x 1/8	00,0,1,2,3,4,6	10" x 3/64	00,0,1,2,4
5" x 5/32	00,0,1,2,3,4	12" x 1/64	00,0,2
6" x 1/16	00,0,1,2,3,4,6		



ROUND STRAIGHT FILES

SIZE	CUT	SIZE	CUT
4" x 1/8	00,0,2,4	8" x 1/4	00,0,2,4
6" x 1/16	00,0,2,4		

These special sizes also carried in stock

SIZE	CUT
4" x 1/8 or 3/32	00,0,2,4
6" x 1/8 or 3/32	00,0,2,4
8" x 1/8 or 3/8	00,0,2,4



THREE SQUARE FILES

SIZE	CUT	SIZE	CUT
3" x 5/32	0,1,2,4	8" x 1/32	00,0,1,2,4
4" x 1/4	00,0,1,2,3,4	10" x 1/32	00,0,2,4
6" x 1/32	00,0,1,2,3,4		



SLITTING FILES

SIZE	CUT	SIZE	CUT
4" x 1/16	0,2	6" x 5/8	0,2



SCREW HEAD FILES

(With or Without Tang)

SIZE	CUT
3" x 1/16 x 1/32	6



ROUND EDGE JOINT FILES

SIZE	CUT	SIZE	CUT
4" x 1/32 x 3/64 (Thick)	2	4" x 1/32 x 3/64 (Thin)	2



SQUARE EDGE JOINT FILES

SIZE	CUT	SIZE	CUT
4" x 1/32 x 3/64 (Thick)	2	4" x 1/32 x 3/64 (Thin)	2



BROACH FILES

SIZE	CUT	TWIST DRILL GAUGE
3"	0 (Double Cut Over-all)	40-65

See Twist Drill Gauges and their Decimal Equivalents on Page 11 of Catalog #13A



6" HAND CORRUGATING FILES

Also called Straight Rowing files, are designed to corrugate when stroked straight ahead. The approximate cross section dimensions are 1/32" x 5/32".

Cuts	No. 0	No. 2	No. 4
Corrugations per inch	50	84	120



DIE SINKERS' FILES

Round	Oval (1 Sharp Edge)	Three Square	Oval	Knife	Flat 1 Safe Edge
1/8	3/32 x 1/64	1/64	3/32 x 1/64	3/32 x 5/64 x 1/64	3/16 x 5/64
Auriform	Square	Flat	Half Round	Crochet	Lozenge
3/32 x 1/64	1/8	1/64 x 3/64	1/4 x 3/32	3/16 x 3/64	1/64 x 1/8
LENGTH OVER-ALL	5 1/4"	LENGTH OF CUT	3 1/2"	CUTS	0,2



ESCAPEMENT FILES (Square Handle Needle)

Round	Half Round	Three Square	Crossing	Knife	Flat
Square	Barrette	Equalling	Slitting	Half Round Blunt	Round Edge Joint
SIZE	5 1/2"	CUT	0-2-4-6		

SIZE: Length, width, thickness given in inches.

SWISS PATTERN FILES

3 1/4" x 1/4" BENCH FILING MACHINE FILES (Cut on Downward Stroke)

PILLAR (2 SAFE EDGES) 7/32 x 1/8	EQUALLING (CUT SIDES AND EDGES) 7/32 x 1/8	THREE SQUARE 7/32	CANT (CUT 3 SIDES) 15/64 x 7/64	LOZENGE 15/64 x 1/8	KNIFE 1/4 x 1/8
ROUND 1/4	HALF-ROUND 1/4 x 1/64	OVAL 5/16 x 5/32	PIPPIN 19/64 x 5/32	CROCHET 1/4 x 1/8	SQUARE 3/16
LENGTH OVER-ALL 3 1/4"		LENGTH OF CUT 2 1/4"	CUTS 00, 2	SHANK 1/4" dia.	

3 1/4" x 1/8" BENCH FILING MACHINE FILES (Cut on Downward Stroke)

PILLAR (2 SAFE EDGES) 13/64 x 5/64	EQUALLING (CUT SIDES AND EDGES) 13/64 x 5/64	THREE SQUARE 5/32	CANT (CUT 3 SIDES) 17/64 x 3/32	LOZENGE 7/32 x 7/64	KNIFE 15/64 x 3/32
ROUND 5/64	HALF-ROUND 13/64 x 3/32	OVAL 3/16 x 7/64	PIPPIN 7/32 x 7/64	CROCHET 13/64 x 5/64	SQUARE 7/64
LENGTH OVER-ALL 3 1/4"		LENGTH OF CUT 2 1/4"	CUTS 00, 2	SHANK 1/8" dia.	

5" PARALLEL MACHINE FILES (Cut on Upward Stroke)

ROUND 1/4	HALF ROUND 17/64 x 1/8	OVAL 1/4 x 5/32	CANT 13/32 x 5/32	PIPPIN 7/32 x 3/32	KNIFE 3/8 x 3/32
CROCHET 1/4 x 1/8	PILLAR 1/4 x 1/8	THREE SQUARE 11/64	SQUARE 1/4	LOZENGE 9/32 x 5/32	EQUALLING 1/4 x 1/8
LENGTH OVER-ALL 7"		LENGTH OF CUT 5"	CUTS 00, 2		

8" PARALLEL MACHINE FILES (Cut on Downward Stroke)

ROUND 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4	SQUARE 3/16, 1/4, 5/16, 3/8, 1/2	PILLAR (1 SAFE EDGE) 3/16 x 3/32, 1/4 x 1/8, 5/16 x 3/16, 3/8 x 1/4, 1/2 x 1/4	CROCHET 3/16 x 3/32, 1/4 x 1/8, 5/16 x 3/16, 3/8 x 1/4, 1/2 x 1/4	THREE SQUARE 3/16, 1/4, 5/16, 3/8, 1/2	HALF ROUND 3/16 x 3/32, 1/4 x 1/8, 5/16 x 3/16, 3/8 x 1/4, 1/2 x 1/4
OVAL 11/32 x 3/16	KNIFE 15/32 x 1/8	PIPPIN 1/64 x 5/32	EQUALLING (CUT SIDES AND EDGES) 3/8 x 5/64	LOZENGE (CUT 3 SIDES) 11/32 x 7/32	CANT 11/32 x 5/32
LENGTH OF CUT 6"		LENGTH OVER-ALL 8"	CUTS 00, 2		

die sinkers' rifflers

1. HELLER U.S.A.	DS-1
2. HELLER U.S.A.	DS-4
3. HELLER U.S.A.	DS-5
4. HELLER U.S.A.	DS-6
5. HELLER U.S.A.	DS-7
6. HELLER U.S.A.	DS-8
7. HELLER U.S.A.	DS-9
8. HELLER U.S.A.	DS-11
9. HELLER U.S.A.	DS-12
10. HELLER U.S.A.	DS-15
11. HELLER U.S.A.	DS-16
12. HELLER U.S.A.	DS-18

SIZE 6 1/2" CUT 0, 2, 4

regular needle files

Round Knurled Handles

EQUALLING
BARRETTE
SLITTING
HALF-ROUND
MARKING
THREE SQUARE
ROUND
CROSSING
FLAT
KNIFE
SQUARE
ROUND EDGE JOINT

SIZE	CUT	Sets of 12 assorted shapes available in handy plastic kit.
4"	0, 2, 4, 6	
5 1/2"	0, 2, 4, 6	
6 1/4"	0, 2, 4, 6	

PLASTIC HANDLE NEEDLE FILES

For comfort and protection of tool and die maker's hands, Heller has available bonded Plastic Handles on Swiss Pattern Needle Files... makes unnecessary makeshift handles or tape. Furnished in a plastic case, 12 shapes of one cut and length... or as required.

silversmiths' rifflers

1. HELLER U.S.A.	SS-1
2. HELLER U.S.A.	SS-2
3. HELLER U.S.A.	SS-3
4. HELLER U.S.A.	SS-4
5. HELLER U.S.A.	SS-5
6. HELLER U.S.A.	SS-6
7. HELLER U.S.A.	SS-7
8. HELLER U.S.A.	SS-8
9. HELLER U.S.A.	SS-9
10. HELLER U.S.A.	SS-10
11. HELLER U.S.A.	SS-11
12. HELLER U.S.A.	SS-12

SIZE 7 1/2" CUT 0, 2

VIXEN®

— the original and still the best milled curved-tooth file



Finishing aluminum to ten-thousandths accuracy by hand dressing with a VIXEN rigid tanged file after mechanical cutting and forming.



Here the VIXEN rigid tanged file is used on plastic because close tolerances are necessary. Equally good results are obtained on Fiberglas.



On stainless steel, the VIXEN rigid tanged file is used where accuracy must be within one ten-thousandth.



The flexible VIXEN is used on curved surfaces in automotive and aviation plants where smooth finishes are required.

cuts freer, more rapid and produces a smoother finish

The VIXEN is an entirely new and revolutionary development in files. Designed originally to salvage hard castings, it has since been frequently improved by Heller and now is used in almost every type of work. Following are its exclusive features:

1. deep gullets and wide pitch give maximum clearing action



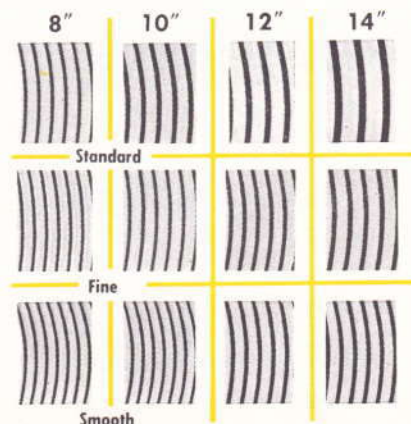
The deep, wide gullets of the VIXEN, shown here, (A), and the widely spaced teeth, (B), enable the filings to curl and drop free—producing a smooth, even finish.

2. undercut gives VIXEN teeth milling cutter action

The unique VIXEN teeth have an undercut or forward slant, (C), which gives a positive cutting action—like actual milling cutters. All teeth are of uniform height and shape — all clearances are held to extremely close tolerances.

3. resharpener for economy

The VIXEN can be resharpener many times—many VIXENS have had as many as ten resharpenings. Heller's development of the automatic sharpening machine is a major advance in file history.



TEETH PER INCH

FLAT, FLEXIBLE, HALF ROUND SOLID, HALF ROUND SHELLS, MOLDING

Size	Std.	Fine	Smooth
8 inch	14	16	18
10 inch	12	14	18
12 inch	10	14	16
14 inch	8	12	15

PILLAR AND SQUARE

Size	Std.
8 inch	18
10 inch	16
12 inch	14

BABBITT

Size	Std.
8 inch	10
10 inch	10
12 inch	8
14 inch	7

FLAT UTILITY

Size	Coarse Side	Smooth Side
8 inch	14	18
10 inch	12	18
12 inch	10	16
14 inch	8	15

The VIXEN is made in various cuts, the names of which apply only to the VIXEN. Above is a chart of these cuts; at left, is listed the number of teeth per inch.

a different and exclusive type of steel

VIXEN'S keen teeth and flexibility demand a very special type of alloy steel. This steel was once imported from Sweden. Now an even superior American chrome alloy steel is used — exclusively made for VIXEN.

rigid tang types



VIXEN FLAT FILES WITH TANG

SIZE		CUT
8" x 1 1/16" x 1 1/64"	ST	F S
10" x 1" x 7/32"	ST	F S
12" x 1 1/32" x 1 1/64"	ST	F S
14" x 1 1/32" x 3/16"	ST	F S



VIXEN BABBITT FILES WITH TANG

SIZE		CUT
8" x 1 1/16" x 1 1/64"	Coarser than Standard	
10" x 1" x 7/32"	Coarser than Standard	
12" x 1 1/32" x 1 1/64"	Coarser than Standard	
14" x 1 1/32" x 3/16"	Coarser than Standard	



VIXEN FLAT UTILITY FILES WITH TANG

SIZE		CUT
8" x 1 1/16" x 1 1/64"	One side ST, one side S	
10" x 1" x 7/32"	One side ST, one side S	
12" x 1 1/32" x 1 1/64"	One side ST, one side S	
14" x 1 1/32" x 3/16"	One side ST, one side S	



VIXEN HALF ROUND FILES WITH TANG

SIZE		CUT
8" x 2 1/32" x 1/4"	ST	F
10" x 1 1/8" x 3/16"	ST	F
12" x 1 1/8" x 3/8"	ST	F
14" x 1 1/32" x 7/16"	ST	F



vixen whizcut

SIZE		CUT
8" x 1 1/16" x 1 1/64"	ST	F S
10" x 1" x 7/32"	ST	F S
12" x 1 1/32" x 1 1/64"	ST	F S
14" x 1 1/32" x 3/16"	ST	F S



VIXEN PILLAR FILES

SIZE		CUT
8" x 1 1/32" x 1/4"	ST	
10" x 2 1/32" x 1 1/8"	ST	
12" x 2 5/32" x 2 1/64"	ST	



VIXEN SQUARE FILES

SIZE		CUT
8" x 1 1/64"	ST	
10" x 1 1/32"	ST	
12" x 1 1/32"	ST	

wood holders



HOLDER V-1



HOLDER V-3

plain type blades



VIXEN FLEXIBLE FILES

SIZE		CUT
8" x 2 1/32" x 5/32"	ST	F
10" x 1" x 5/32"	ST	F
12" x 1 1/32" x 3/16"	ST	F S
14" x 1 1/32" x 3/16"	ST	F S



VIXEN HALF ROUND SHELL FILES

SIZE		CUT
8" x 7/8" x 1/8"	ST	
10" x 1 1/8" x 1/8"	ST	
12" x 1 1/4" x 1/8"	ST	
14" x 1 1/32" x 1/8"	ST	F



VIXEN HALF OVAL SHELL FILES

SIZE		CUT
14" x 1 1/32" x 3/64"	ST	



VIXEN NARROW FLEXIBLE FILE

SIZE		CUT
14" x 5/8"	ST	
14" x 3/4"	ST	
14" x 1"	ST	



VIXEN MOLDING FILES

SIZE		CUT
8" x 7/8" x 1/8"	ST	
10" x 1 1/8" x 1/8"	ST	
12" x 1 1/4" x 1/8"	ST	
14" x 1 1/32" x 1/8"	ST	

SPECIAL SEALED PACKAGE

Vixen 14-inch Flexible, 14" Half Round Shell and 14" Molding files are sealed with a rivet in individual envelopes at the factory for buyers' protection against imitation, inferior and resharpened files.



VIXEN HALF CIRCLE FILE

SIZE		CUT
14"	ST	



SPECIAL CURVED VIXEN FILE

SIZE		CUT
14"	ST	

metal holder



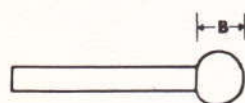
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HELLER

Rotary Files and Burs

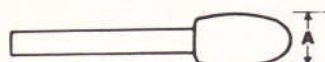
and Burs

Rotary Files and Burs are power driven files widely used in tool and die shops, pattern shops, aircraft and automotive plants, machine shops, foundries, etc. for removing burrs and fins, elongating holes and slots, finishing small and intricate parts, or simply smoothing rough or hard-to-get-at surfaces. This type file is designed for use in drill presses, lathes, and electric or air operated hand tools or flexible shaft equipment.



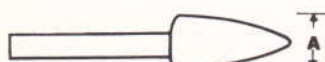
**BALL SHAPE
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H12	HG12	3/8"	3/8"	H16	HG16	1/2"	1/2"
H13	HG13	3/8"	3/8"	H17	HG17	3/8"	3/8"
H14	HG14	1/4"	1/4"	H18	HG18	3/4"	3/4"
H88	HG88	3/8"	3/8"	H19	HG19	1"	1"
H15	HG15	3/8"	3/4"				



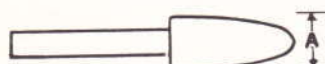
**OVAL SHAPE
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H34	HG34	3/8"	3/8"	H37	HG37	1/2"	3/8"
H35	HG35	3/8"	1/2"	H38	HG38	3/8"	1"
H87	HG87	3/8"	3/8"	H39	HG39	3/4"	1 1/4"
H36	HG36	3/8"	3/32"	H40	HG40	1"	1 3/8"



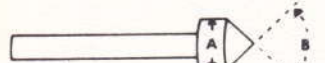
**TREE SHAPE (pointed end)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H4	HG4	1/4"	3/4"	H7	HG7	1/2"	1 1/4"
H5	HG5	3/8"	3/4"	H8	HG8	3/8"	1"
H6	HG6	1/2"	3/4"	H9	HG9	1 1/8"	2"



**TREE SHAPE (radius end)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H28	HG28	1/4"	3/4"	H31	HG31	1/2"	1 1/4"
H29	HG29	1/4"	1 1/2"	H32	HG32	3/4"	1 1/4"
H30	HG30	3/8"	3/4"	H33	HG33	1 1/8"	2"



**CONE SHAPE (60° and 90°)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H20	HG20	1/2"	90°	H24	HG24	1/2"	60°
H21	HG21	3/8"	90°	H25	HG25	3/8"	60°
H22	HG22	3/4"	90°	H26	HG26	3/4"	60°
H23*	HG23*	1"	90°				

*H-23 and HG-23 also available in 1 1/4", 1 3/4", 2" and 2 3/4" diameter made without point. 1 3/4" and 1 3/4" diameter have 3/8" shank, 2" diameter has 3/8" shank, 2 3/4" diameter has 3/4" shank.



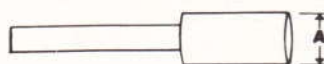
**CONE SHAPE (other)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H27	HG27	1"	1 3/4"	H46	HG46	1/4"	1 1/4"
H41	HG41	1/4"	1/2"	H47	HG47	3/8"	3/8"
H42	HG42	1/4"	3/4"	H48	HG48	1/2"	3/8"
H43	HG43	1/4"	1"	H49	HG49	3/8"	1"
H44	HG44	3/8"	3/4"				
H45	HG45	3/8"	1"				



**FLAME SHAPE
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	H2	HG2	3/8"	1 1/4"
H1	HG1	3/8"	3/8"	H3	HG3	3/4"	1 3/4"

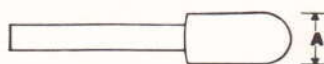


**CYLINDRICAL SHAPE (flat end)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H50†	HG50	1/8"	1/2"	H56	HG56	3/8"	1 1/2"
H51	HG51	1/4"	1"	H57	HG57	3/8"	1 1/2"
H52	HG52	1/4"	1 1/2"	H58	HG58	1/2"	1 1/2"
H53	HG53	3/8"	1"	H93	HG93	3/8"	1"
H54	HG54	1/2"	1"	H94	HG94	3/4"	1 1/2"
H55	HG55	3/4"	3/4"	H95	HG95	1"	1"

†(Not End Cut)

Hand Cut — Cut End unless otherwise specified.
Ground-from-Solid — Plain End unless otherwise specified.



**CYLINDRICAL SHAPE (ball nose)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H59	HG59	1/8"	1/2"	H64	HG64	1/2"	1"
H60	HG60	1/4"	1"	H65	HG65	3/8"	1"
H61	HG61	1/4"	1 1/2"	H66	HG66	3/4"	1 1/4"
H62	HG62	3/8"	1"	H67	HG67	3/8"	1 1/2"
H63	HG63	3/4"	1 1/2"	H68	HG68	1/2"	1 1/4"



**TAPERED SHAPE (radius end)
HIGH-SPEED STEEL**

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H69	HG69	3/8"	3/8"	H71	HG71	3/8"	1 3/4"
H70	HG70	3/8"	1 1/4"	H72	HG72	3/8"	1"



**CYLINDRICAL SHAPE (double tapered)
HIGH-SPEED STEEL ***

HAND CUT	GROUND from solid	A	B
H73	HG73	1 1/8"	3/8"



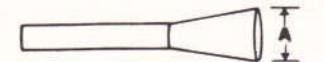
**BI-SHAPE
HIGH-SPEED STEEL ***

HAND CUT	GROUND from solid	A	B
H10	HG10	1/4"	1"
H11	HG11	3/8"	1 1/4"
H97	HG97	3/8"	1 1/4"



**BARREL SHAPE
HIGH-SPEED STEEL ***

HAND CUT	GROUND from solid	A	B
H89	HG89	1/2"	1"



**INVERTED CONE SHAPE
HIGH-SPEED STEEL ***

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H74	HG74	3/4"	3/8"	H96	HG96	1/2"	3/4"

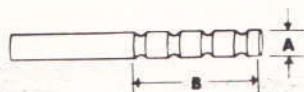


**CONCAVE SHAPE—Type 1
HIGH-SPEED STEEL ***

HAND CUT	GROUND from solid	A	B	HAND CUT	GROUND from solid	A	B
H75	HG75	3/4"	1/2"	H91	HG91	1 1/4"	3/2"
H90	HG90	1"	3/2"				

* THESE FILES MADE IN CARBIDE ON SPECIAL ORDER ONLY

ROTARY FILES - cont'd



**CONCAVE SHAPE—Type 2
HIGH-SPEED STEEL***

Furnished with cut end
unless otherwise specified.

HAND	GROUND	A	B
CUT	from solid		
H92	HG92	1/4"	1 3/8"

*THESE FILES MADE IN CARBIDE ON SPECIAL ORDER ONLY

RECOMMENDED OPERATING SPEEDS OF HIGH-SPEED STEEL ROTARY FILES FOR VARIOUS MATERIALS:

Revolutions per Minute for Various File Diameters

	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Steel	4,000	2,500	2,000	1,500	1,350	1,200	800
Cast Iron	6,000	3,400	2,250	1,750	1,450	1,250	1,000
Aluminum	15,000	10,000	8,000	6,000	5,000	4,000	2,500
Brass							
Bronze							
Magnesium	8000	7000	6500	6000	5000	4500	4000

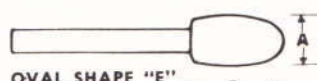
CARBIDE BURS

Burs with 3/16" and 1/4" cutting diameter are solid carbide throughout and are 2" overall in length. All other burs are made with carbide heads brazed to 1/4" diameter steel shanks 2" long. Standard (Medium) Cut Burs only are listed in this catalog. Fine, Coarse and Dia-Mo Cut Burs are also available when specified.



BALL SHAPE "D"

A	B
D-103 1/8"	D-131 1/4"
D-24 3/16"	D-141 1/2"
D-105 1/4"	D-161 3/8"
D-113 3/8"	D-181 1"
D-121 3/8"	D-201 1 1/4"



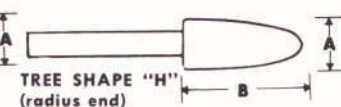
OVAL SHAPE "E"

A	B
E-105 1/4"	E-121 3/8"
E-121 3/8"	E-141 1/2"
E-141 1/2"	E-161 3/8"
E-161 3/8"	E-181 1"
E-181 1"	E-201 1 1/4"



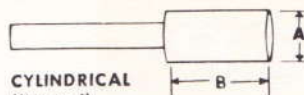
**TREE SHAPE "K"
(pointed end)**

A	B
K-105 1/4"	K-142 1/2"
K-111 3/16"	K-161 3/8"
K-121 3/8"	K-182 1"
K-141 1/2"	K-183 3/4"



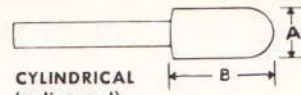
**TREE SHAPE "H"
(radius end)**

A	B
H-3 1/8"	H-141 1/2"
H-105 1/4"	H-161 3/8"
H-121 3/8"	H-182 1"
H-131 3/8"	H-181 3/4"
H-145 1/2"	H-183 3/4"



**CYLINDRICAL
(flat end)**

Shape "A"	Shape "B"
(Not End Cut)	(End Cut)
A-103 1/8"	B-103 1/2"
A-15 3/16"	B-15 3/8"
A-23 3/16"	B-23 3/8"
A-105 1/4"	B-105 3/8"
A-111 3/8"	B-111 3/4"
A-121 3/8"	B-121 3/4"
A-131 7/16"	B-131 1"
A-141 1/2"	B-141 1"
A-161 3/8"	B-161 1"
A-182 3/4"	B-182 1/2"
A-184 3/4"	B-184 3/4"
A-185 3/4"	B-185 1"
A-201 1"	B-201 1"



**CYLINDRICAL
(radius end)**

SHAPE "C"

A	B
C-5 1/8"	1/2"
C-7 3/16"	3/8"
C-23 3/16"	3/8"
C-105 1/4"	3/8"
C-111 3/8"	3/4"
C-121 3/8"	3/4"
C-131 3/8"	1"
C-141 1/2"	1"
C-161 3/8"	1"
C-181 3/4"	1"



TAPER SHAPES

SHAPE "M"

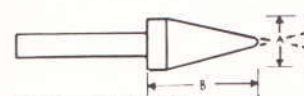
A	B
M-105 1/4"	60°
M-121 3/8"	60°
M-141 1/2"	60°
M-161 3/8"	60°
M-181 3/4"	60°
M-201 1"	60°

SHAPE "R"

A	B
R-105 1/4"	90°
R-121 3/8"	90°
R-141 1/2"	90°
R-161 3/8"	90°
R-181 3/4"	90°
R-201 1"	90°

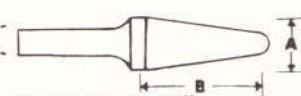
SHAPE "T"

A	B
T-105 1/4"	82°
T-121 3/8"	82°
T-141 1/2"	82°
T-161 3/8"	82°
T-181 3/4"	82°
T-201 1"	82°



TAPER SHAPE "L"

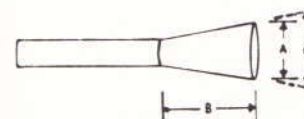
A	B	C
L-104 1/4"	3/4"	14°
L-105 1/4"	1/2"	22°
L-108 1/4"	1"	10°
L-121 3/8"	3/8"	28°
L-141 1/2"	7/8"	28°
L-161 3/8"	1"	31°



TAPER SHAPE "U"

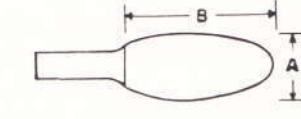
14° included angle

A	B
U-105 1/4"	3/8"
U-111 3/8"	3/8"
U-121 3/8"	1 1/16"
U-141 1/2"	1 1/8"
U-161 3/8"	1 3/8"
U-183 3/4"	1 1/2"



INVERTED TAPER SHAPE "S"

A	B	C
S-105 1/4"	3/8"	10°
S-141 1/2"	1/2"	28°
S-161 3/8"	3/4"	18°
S-181 3/4"	3/8"	30°



FLAME SHAPE "G"

A	B
G-111 3/16"	3/4"
G-141 1/2"	1 1/4"
G-161 3/8"	1 3/8"
G-181 3/4"	1 3/8"

Recommended Speeds for Various Diameters - Medium Cut

Dia.	R.P.M.	Dia.	R.P.M.	Dia.	R.P.M.	Dia.	R.P.M.
1/8"	45,000	3/8"	29,000	5/8"	23,000	7/8"	19,000
1/4"	35,000	1/2"	25,000	3/4"	20,000	1"	18,000

Increase above speeds approximately 60% for stainless steel.

SOLID CARBIDE BUR SETS

SET NO. 1 1/8" DIA. HEADS 1/8" DIA. SHANKS 1 1/2" OVERALL LENGTH		SET NO. 2 1/4" DIA. HEADS 3/16" DIA. SHANKS 1" SHANK LENGTH		SET NO. 3 1/4" DIA. HEADS 3/16" DIA. SHANKS 1 1/4" SHANK LENGTH		SET NO. 4 3/16" & 1/4" DIA. HEADS 1/4" DIA. SHANKS 2" LENGTH OVERALL		SET NO. 5 3/16" & 3/8" DIA. HEADS 1/8" DIA. SHANKS 1 1/2" OVERALL LENGTH		SET NO. 6 3/16" DIA. HEADS 3/16" DIA. SHANKS 2" OVERALL LENGTH	
Heller Tool No.	Length of Head	Heller Tool No.	Length of Head	Heller Tool No.	Length of Head	Heller Tool No.	Length of Head	Heller Tool No.	Length of Head	Heller Tool No.	Length of Head
A-1 3/16"		A-51 1/2"		A-53 1/2"		A-23 3/8"		A-14 1/2"		A-22 3/8"	
A-2 3/16"		B-51 3/16"		B-55 3/16"		A-105 3/8"		A-21 1/2"		C-24 3/16"	
C-1 3/16"		C-51 1/2"		C-52 1/2"		C-23 3/8"		C-12 1/2"		D-23 3/16"	
D-1 1/8"		D-51 1/4"		D-52 1/4"		C-105 3/8"		C-21 1/2"		E-23 3/16"	
E-1 3/16"		E-51 3/8"		E-52 3/8"		D-24 3/16"		D-21 3/16"		H-23 1/2"	
H-1 1/2"		H-51 1/2"		H-53 1/2"		D-105 1/4"		E-22 3/16"		K-21 1/2"	
H-2 1/4"		K-51 1/2"		K-52 1/2"		E-105 3/8"		H-22 1/2"		L-21 3/8"	
K-1 1/4"		L-51 1/2"		L-52 1/2"		H-105 3/8"		K-22 1/2"		M-21 3/16"	
L-3 3/8"		S-51 1/4"		S-55 1/4"		K-105 3/8"		L-22 1/2"		P-22 3/8"	
P-1 1/4"						L-104 3/8"		P-21 3/8"		R-21 3/16"	
S-1 3/16"						L-105 1/2"		S-22 1/4"		S-25 1/4"	
U-4 3/8"						S-105 3/8"		U-21 1/2"		U-22 1/2"	

HELLER

Precision Ground

SOLID CARBIDE TOOLS AND BURS

The precision, rigidity and superior edge-holding ability of solid carbide tools and burs provide many advantages over both carbide tipped and high speed steel cutters. The added rigidity — 3 times greater than hardened high speed steel — has less tendency to deflect or wander when taking deep cuts in tough materials.

Solid Carbide Tools also cut closer to size because they are less affected by added heat and/or torque encountered when machining tough or hardened materials. These are important considerations where high production, accuracy and ability to work hard-to-machine materials are factors.


The Heller Line of Solid Carbide Tools and Burs encompasses the largest and most complete range of shop tested and approved standard stock items. Exclusive design automatic grinders, special form-relieving machinery, precision drill fluting, superior finishes and exacting tolerances all contribute to the superior performance and longer life of these precision-made tools.



BURS & BUR SETS



GRINDING TOOLS



END MILLS



ROUTERS



REAMERS



DRILLS



BORING BITS



BORING TOOLS



COUNTERSINKS



KEYSEAT CUTTERS



SPECIALS

HELLER HAMMERS

All Heller Hammers are drop forged from the highest quality tool steel, precision tempered and hardened. Every head has a crowned face with a forged-in safety rolled edge which eliminates chipping . . . gives built-in protection to the worker and his work. Heller Hammers are accurately balanced . . . fitted with high quality second growth hickory handles designed to fit the hand . . . identified by the exclusive Spot-Burned finish.



Write for complete Heller Hammer Catalog No. T-56.

HELLER

nucut

"NUWELD"

Hole Saws

ALL THE MOST WANTED SIZES

Heller "Nu weld" Shatterproof Hole Saws are rugged cutting tools designed to cut accurate holes cleanly and efficiently in machineable materials up to 1 1/8" thick. Ranging in size from 3/16" to 6" diameter, they can be used in portable electric or air tools, drill presses, lathes, boring mills, milling machines or any other machine tool which has a rotating spindle that can be operated at the correct speed for the size of hole saw to be used and type of material to be cut.

They are made with a wear-resistant, fast cutting high speed steel cutting edge, permanently bonded to an extra tough alloy steel body by an electric welding process. The blade is rolled to the correct diameter and silver brazed along the seam for maximum strength and concentricity. It is then welded to the outside diameter of a tough, resilient steel cap making the diameter of the cut slightly larger than the diameter of the cap, which allows the saw to follow completely through its own hole. The depth of cut of this "shoulder-less" design is limited only by the ability of the operator to remove the cores when drilling a deep hole through stacked or layers of material. The knock-out slots permit easy removal of cores. Furnished in standard stock sizes as shown in table on opposite page.

FOR ALL MACHINABLE MATERIALS

Mechanics, maintenance men, electricians, plumbers, construction workers and installation men use hole saws for numerous applications such as:

- Cutting holes for pipe or electrical conduits.
- Installing pipes and valves in fabricated tanks.
- Installing vents for clothes dryers.
- Cutting holes for the installation of running lights on tank trucks.
- Installing air-conditioning units in automobiles.

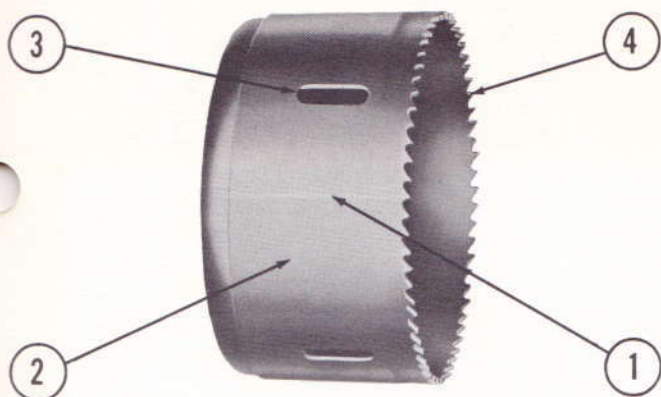
Heller Hole Saws can be used for cutting steel pipe, cast iron pipe, steel plates, aluminum, copper, brass, stainless steel, wood or plastics.

(Continued) →

STANDARD STOCK SIZES (Without Arbors)

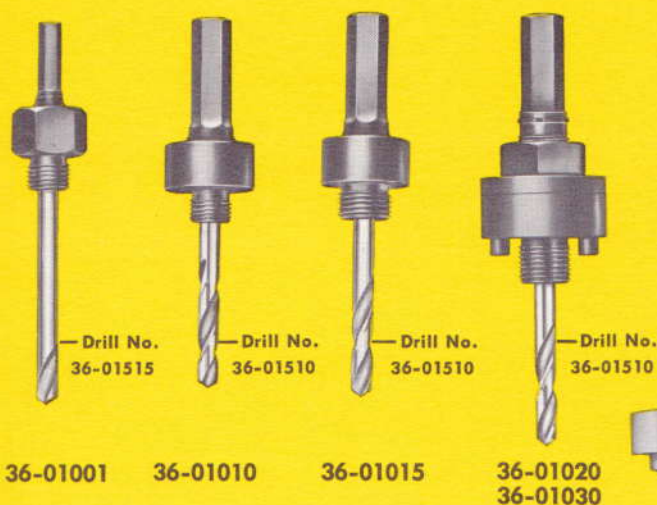
Catalog Number	Saw Diameter (Inches)	Threaded Hole in Saw Cap	For Use With Arbor Numbers	Use for Pipe Tap, Pipe Size	Use for Pipe Entrance, Pipe Size	Approx. Legal Shpg. Weight - Lbs./100	Catalog Number	Saw Diameter (Inches)	Threaded Hole in Saw Cap	For Use With Arbor Numbers	Use for Pipe Tap, Pipe Size	Use for Pipe Entrance, Pipe Size	Approx. Legal Shpg. Weight - Lbs./100
36-00090	9/16	1/2"-20	36-01001 - 36-01010	3/8	1/4	12.5	36-00340	2 1/8	5/8"-18	36-01020 - 36-01030	—	—	37.5
36-00100	5/8	1/2"-20		—	—	12.5	36-00360	2 1/4	5/8"-18		2	—	37.5
36-00110	1 1/16	1/2"-20		—	—	12.5	36-00370	2 5/16	5/8"-18		—	—	37.5
36-00120	3/4	1/2"-20		1/2	3/8	12.5	36-00380	2 3/8	5/8"-18		—	—	37.5
36-00130	13/16	1/2"-20		—	—	12.5	36-00400	2 1/2	5/8"-18		—	2	43.8
36-00140	7/8	1/2"-20		—	1/2	12.5	36-00410	2 9/16	5/8"-18		—	—	43.8
36-00150	1 5/16	1/2"-20		3/4	—	12.5	36-00420	2 5/8	5/8"-18		2 1/2	—	43.8
36-00160	1	1/2"-20		—	—	12.5	36-00440	2 3/4	5/8"-18		—	—	50.0
36-00170	1 1/16	1/2"-20		—	—	18.8	36-00460	2 7/8	5/8"-18		—	—	50.0
36-00180	1 1/8	1/2"-20		—	3/4	18.8	36-00480	3	5/8"-18	36-01020 - 36-01030 - 36-01040	—	2 1/2	50.0
36-00190	1 3/16	1/2"-20	36-01015 - 36-01020 - 36-01030	1	—	18.8	36-00500	3 1/8	5/8"-18		—	—	60
36-00200	1 1/4	5/8"-18		—	—	18.8	36-00520	3 1/4	5/8"-18		3	—	63
* 36-00201	1 1/4	1/2"-20		—	—	18.8	36-00540	3 3/8	5/8"-18		—	—	66.5
36-00210	1 5/16	5/8"-18		—	—	18.8	36-00560	3 1/2	5/8"-18		—	—	70.5
36-00220	1 3/8	5/8"-18		—	1	25.0	36-00580	3 5/8	5/8"-18		—	3	73.5
* 36-00221	1 3/8	1/2"-20		—	—	25.0	36-00600	3 3/4	5/8"-18		3 1/2	—	76
36-00230	1 7/16	5/8"-18		—	—	25.0	36-00620	3 7/8	5/8"-18		—	—	79.5
36-00240	1 1/2	5/8"-18		1 1/4	—	25.0	36-00640	4	5/8"-18		—	—	82.5
* 36-00241	1 1/2	1/2"-20		—	—	25.0	36-00660	4 1/8	5/8"-18		—	3 1/2	85
36-00250	1 9/16	5/8"-18	36-01020 - 36-01030	—	—	25.0	36-00680	4 1/4	5/8"-18		4	—	88.5
36-00260	1 5/8	5/8"-18		—	—	25.0	36-00700	4 3/8	5/8"-18	36-01030 - 36-01040	—	—	92.5
36-00270	1 11/16	5/8"-18		—	—	31.3	36-00720	4 1/2	5/8"-18		—	4	97
36-00280	1 3/4	5/8"-18		1 1/2	1 1/4	31.3	36-00760	4 3/4	5/8"-18		4 1/2	—	120
36-00290	1 13/16	5/8"-18		—	—	31.3	36-00800	5	5/8"-18		—	—	147
36-00300	1 7/8	5/8"-18		—	—	31.3	36-00840	5 1/4	5/8"-18		5	—	160
36-00320	2	5/8"-18		—	1 1/2	31.3	36-00880	5 1/2	5/8"-18		—	—	172
36-00330	2 1/16	5/8"-18		—	—	31.3	36-00920	5 3/4	5/8"-18		—	5	186
							36-00960	6	5/8"-18		—	—	200

* For use with Arbor Numbers 36-01001 and 36-01010 only.



- 1 Silver Brazed seam assures maximum strength and concentricity.
- 2 Tough steel backing absorbs shock.
- 3 Slots permit easy removal of cores.
- 4 High speed tool steel cutting edge for rapid cutting. All saws 6 teeth per inch regular set.

ARBORS - ADAPTORS - EXTENSIONS



Heller's pin-drive arbor design provides a positive floating drive arrangement to the saw which assures uniform cutting and eliminates the possibility of stripping threads in heavy cutting. This pin-drive also makes it easier to remove the saw after heavy cutting since the saw can not tighten up on the arbor threads. Heat treated for extra strength and longer life, these arbors have straight hexagonal shape shanks for a positive non-slip drive when used in jaw chucks. The High Speed Steel pilot drills have a flat spot on the shank for equally positive driving. Furnished in standard stock sizes as shown in tables below.



ARBORS - COMPLETE WITH 1/4" HIGH SPEED STEEL PILOT DRILLS

Catalog Number	Chuck or Adaptor Diameter	Shank Size	Fits Saws (See List)	Weight Per 100
36-01001	1/4"	1/4" Hex	1/2" - 20 Thread	17.5 lbs.
36-01010	1/2"	3/16" Hex	1/2" - 20 Thread	19.0 lbs.
36-01015	1/2"	3/16" Hex	5/8" - 18 Thread	19.0 lbs.
36-01020	1/2"	3/16" Hex	5/8" - 18 Thread	53.0 lbs.
36-01030	3/4"	5/8" Hex	5/8" - 18 Thread	55.0 lbs.

Catalog Number	Chuck or Adaptor Diameter	Shank Size	Fits Saws (See List)	Weight Per 100
36-01040	# 3 Morse Taper	# 3 Morse Taper	3" to 6" Diam.	400 lbs.
36-01050	1/2"	12" Extension Fits All 7/16" Shanks		88 lbs.
36-01510	1/4" High Speed Steel Pilot Drill (Packed 10 to a box)			5 lbs.
36-01515	1/4" High Speed Steel Short Flute Pilot Drill (Packed 10 to a box)			5 lbs.
36-01520	3/8" Pilot Pin			7 lbs.

MORSE TAPER ADAPTORS

Catalog Number	Morse Taper	For Arbor	Weight Per 100
36-01060	2	7/16" Hex	20 lbs.
36-01070	3	7/16" Hex	70 lbs.
36-01080	3	5/8" Hex	60 lbs.



Heller newcut

"Job Tempered"

HIGH SPEED "M"-HAX BLADE

for General Purpose Cutting
... at Lowest Cost

Heller High Speed "M"-HAX Blades deliver fast, straight cuts on a wide variety of steels. When machines are in good condition, you can depend on these blades for the long life that keeps costs low.

HIGH SPEED "T"-HAX BLADE

for Cutting Tough
High-Alloy Steels

Heller High Speed "T"-HAX Blades are first choice for cutting stainless and other high alloy steels. Their high heat resistance helps them stand up when the going is rough.

NUWELD SHATTER- PROOF BLADE

for Maximum Safety
Under All Conditions

Heller "NUWELD" Blades will not shatter in operation no matter how rough the use or how old the machine. The combination of a High Speed Steel cutting edge electrically welded to an extra tough alloy steel body prevents breakage . . . You can safely use these shatter-proof blades for all types of cutting.

HOW TO GET THE MOST OUT OF POWER BLADES

CHECK YOUR MACHINE! If it isn't lifting the blade slightly on the return stroke, blade life will be shortened.

TEST SPEEDS AND FEEDS! Slow speed and heavy feed make blades last longer. When speeds are too fast and feeds too light, blades slide over the work and dull themselves too soon. Actual tests will show you the best feed and speed for the specific jobs at hand. Use the following chart as the basis for tests.

Machine	With or Without Solution	Unannealed Tool Steel & Hard Metals Strokes Per Minute	Annealed Tool Steel Strokes Per Minute	Machinery Steel and Soft Metal Strokes Per Minute
Light	Without	40	50-60	50-60
Medium	Without	40	50-60	50-60
Medium	With	60	65-90	100-110
Heavy	With	60	90	110-120
Ex. Heavy	With	60	90	110-120

Except when cutting cast iron, plenty of cutting compound should be used. This acts as a cooling medium and also reduces friction to a minimum.

Power Hack Saw Blades



SELECT THE CORRECT TOOTH SPACING

3T AND 4T BLADES are best for cutting 4" or larger sections of the softer ferrous metals, most alloy steels and non-ferrous metals. Large gullet capacity handles heavy chips, prevents clogging, speeds cutting and lengthens blade life.



10T BLADES are used for cutting very hard materials and sections up to 2" thick. They're better suited for general-purpose cutting in the machine shop than for production cutting. For the latter, 4-6 tooth blades are preferable.



6T BLADES are recommended for cutting 2" to 4" sections of bars and hard materials. They last longer than blades with coarser tooth spacing for these applications. More teeth per inch spread wear over more cutting points.



14T BLADES should be used for cutting such thin sections as pipe, tubing, small bars and light angle iron. Since these blades are only .032" and .050" thick, their use should be confined to light machines cutting small sections.



POWER BLADE SPECIFICATIONS PACKED 10 BLADES IN A BOX

ORDER BY PART NUMBER		HIGH SPEED "M"-HAX			HIGH SPEED "T"-HAX			"NUWELD" High Speed		
Length and Width	Thickness	No. Teeth per Inch and Part No.		Lbs. per 100	No. Teeth per Inch and Part No.		Lbs. per 100	No. Teeth per Inch and Part No.		Lbs. per 100
12"x	5/8"	14	18	7.5	14	18	8	14	18	8
		33-1214-3	33-1218-3		34-1214-3	34-1218-3		35-1214-3	35-1218-3	
	1	10	14	19	10	14	20	10	14	20
		33-1210-5	33-1214-5		34-1210-5	34-1214-5		35-1210-5	35-1214-5	
14"x	1	10	14	21	10	14	23	10	14	23
		33-1410-5	33-1414-5		34-1410-5	34-1414-5		35-1410-5	35-1414-5	
	1 1/4	6	10	32	6	10	35	6	10	35
		33-1406-6	33-1410-6		34-1406-6	34-1410-6		35-1406-6	35-1410-6	
17"x	1 1/2	3	4	46	3*	4	50	4	6	51
		33-1403-7	33-1404-7		34-1403-7	34-1404-7		35-1404-7	35-1406-7	
	1	10	14	25	10	14	27	10	14	28
		33-1710-5	33-1714-5		34-1710-5	34-1714-5		35-1710-5	35-1714-5	
18"x	1 1/4	3	4	39	4	6	42	4	6	43
		33-1703-6	33-1704-6		34-1704-6	34-1706-6		35-1704-6	35-1706-6	
	1 1/2	6	10		10			10		
		33-1706-6	33-1710-6		34-1710-6			35-1710-6		
21"x	1 1/4	6	10	40	6	10	44	6	10	45
		33-1806-6	33-1810-6		34-1806-6	34-1810-6		35-1806-6	35-1810-6	
	1 1/2	4	6	59	3	4	64	3	4	64
		33-1804-7	33-1806-7		34-1803-7	34-1804-7		35-1803-7	35-1804-7	
24"x	1 3/4	3	4	84	3*	4	90	3	4	88
		33-1803-8	33-1804-8		34-1803-8	34-1804-8		35-1803-8	35-1804-8	
	1 3/4	3	4	95	3†	4	103	4	6	104
		33-2103-8	33-2104-8		34-2103-8	34-2104-8		35-2104-8	35-2106-8	
30"x	2 1/2	4	6	111	3†	4	119	3	4	125
		33-2403-8	33-2406-8		34-2403-8	34-2404-8		35-2403-8	35-2404-8	
	2	3	4	142	3*	4	152	3	4	149
		33-2403-0	33-2404-0		34-2403-0	34-2404-0		35-2403-0	35-2404-0	
36"x	4 1/2	4		229	4		244	4		231
		33-3004-0			34-3004-0			35-3004-0		
36"x	4 1/2				2 1/2		654	2 1/2		648
					34-3625-2			35-3625-2		

This list comprises all types, sizes, and tooth spacings that will be regularly carried in stock. Anything differing from these Hack Saws will be considered as special and will not be manufactured except in cases of urgent necessity.

*Also furnished Every Tooth Set designed for cutting High Chrome Nickel Alloy Steel. Be sure to specify when ordering.

†Furnished Every Tooth Set only for cutting High Chrome Nickel Alloy Steel.

Heller

"Job Tempered"

Hand Hack

"HARD-EDGE"

STANDARD STEEL BLADES . . . for general all-purpose cutting by machinists, mechanics, electricians, plumbers and maintenance men.

HIGH SPEED "M"-HAX

HIGH SPEED "M"-HAX BLADES . . . for fast, dependable cutting and long life on a variety of steels.

HIGH SPEED "T"-HAX

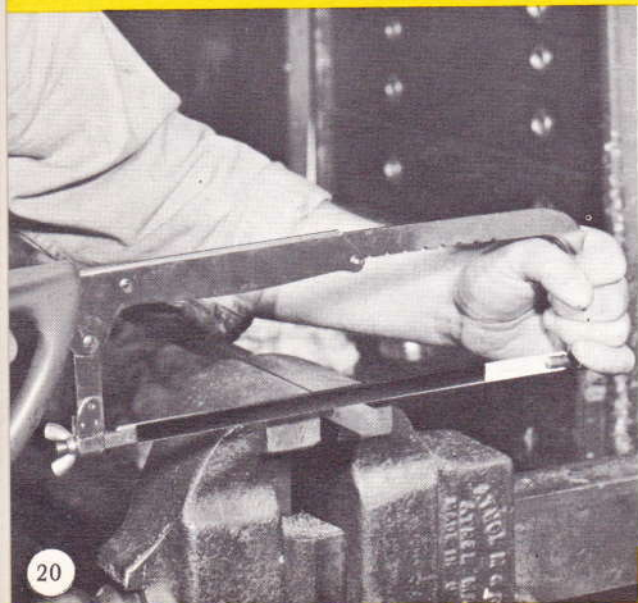
HIGH SPEED "T"-HAX BLADES . . . with the heat resistant property necessary for cutting tough alloy steels.

CHOOSE THE RIGHT EDGE

Each of the three types of Heller Hand Blades is available in "Hard-Edge" or "All-Hard".

"HARD-EDGE" Blades are best for general purpose cutting. They are heat treated only on the tooth edge. The body of the blade remains tough and flexible to resist breakage under severe conditions.

"ALL-HARD" Blades are heat treated for uniform hardness throughout. This gives them the stiffness preferred by skilled mechanics for straight, true cuts. They are recommended only where work is securely held.



Saw Blades

OR "ALL-HARD"

CHOOSE THE RIGHT TOOTH SIZE!

14T BLADES are designed to cut aluminum, brass, bronze, copper and soft steel of large cross section. Large gullets prevent clogging. Regular set.

18T BLADES are recommended for cutting light angle iron, iron pipe and tool steels. Best for general shop use. Regular set.

24T BLADES are preferred for cutting drill rod, medium sheet metal, tubing and hard materials in general. Wavy set.

32T BLADES are best suited for cutting thin sheet metal and thin wall tubing. Wavy set.

1"

SPECIFICATIONS ORDER BY PART NUMBER

STANDARD Steel

HIGH SPEED "M"-HAX

HIGH SPEED "T"-HAX

ORDER BY PART NUMBER			10" BLADES		12" BLADES		14" BLADES	
Length and Width	Thick-ness	No. Teeth per Inch	HARD EDGE Part No.	ALL HARD Part No.	HARD EDGE Part No.	ALL HARD Part No.	HARD EDGE Part No.	ALL HARD Part No.
10" x 1/2"	.025	18	30-1018	30A-1018	31-1018	31A-1018	32-1018	32A-1018
		24	30-1024	30A-1024	31-1024	31A-1024	32-1024	32A-1024
		32	30-1032	30A-1032	31-1032	31A-1032	32-1032	32A-1032
12" x 1/2"	.025	14	30-1214	30A-1214	31-1214	31A-1214	32-1214	32A-1214
		18	30-1218	30A-1218	31-1218	31A-1218	32-1218	32A-1218
		24	30-1224	30A-1224	31-1224	31A-1224	32-1224	32A-1224
		32	30-1232	30A-1232	31-1232	31A-1232	32-1232	32A-1232
PACKED 100 BLADES IN A BOX		10" BLADES → Weight per 100: 3¼ lbs. 12" BLADES → Weight per 100: 4 lbs.			Weight per 100: 3½ lbs. Weight per 100: 4½ lbs.		Weight per 100: 4¼ lbs. Weight per 100: 4¾ lbs.	

This list comprises all types, sizes, and tooth spacings that will be regularly carried in stock. Anything differing from these Saws will be considered as special and will not be manufactured except in cases of urgent necessity.

STANDARD HARD EDGE

REGULAR SET

Specify Regular Set for cutting material of uniform size and for contour cutting. Regular Set consists of a repeated 3-tooth sequence of one tooth set to the left, one tooth set to the right, and one unset tooth called a raker. Regular Set Saws are furnished with 6 to 24 teeth per inch.



HELLER SAWS WITH REGULAR SET

Width Inches	Thick- ness	Teeth per Inch						
1/8	.025	—	—	—	—	14	18	24
3/16	.025	—	—	10	—	14	18	—
1/4	.025	—	—	10	12	14	18	24
3/8	.025	—	8	10	—	14	18	—
1/2	.025	6	—	10	—	14	18	—
5/8	.032	—	8	10	—	14	18	—
3/4	.032	6	8	10	12	14	—	—
1	.035	6	8	10	—	14	—	—

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.

STANDARD HARD EDGE

WAVY SET

Specify Wavy Set when thin stock or work variety creates a tooth-breakage problem. Wavy Set consists of groups of teeth set alternately to the left and right. This spreads cutting strain over *groups* of teeth instead of confining it to individual teeth. As a result, a wide variety of shapes and sizes of material can be cut with the same blade. Wavy Set Blades are furnished with 8 to 32 teeth per inch.



HELLER SAWS WITH WAVY SET

Width Inches	Thick- ness	Teeth per Inch						
1/4	.025	—	—	—	—	—	—	32
1/2	.025	—	10	—	14	—	24	—
3/8	.032	—	10	—	14	—	—	—
3/4	.032	8	10	12	14	18	—	—
1	.035	—	10	—	—	—	—	—

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.

STANDARD HARD EDGE

SKIP TOOTH SHAPE



Specify Skip Tooth saws for cutting soft materials that form large chips. They supply more gullet capacity without weakening the body of the saw. So, they're ideal for cutting aluminum, copper, magnesium and soft brasses. Skip Tooth saws also provide high-speed, low-cost cutting for wood, plywood, plastics and composition materials.

HELLER SAWS WITH SKIP TOOTH

Width Inches	Thick- ness	Teeth per Inch Regular Set			
3/16	.025	—	—	4	—
1/4	.025	—	—	4	6
3/8	.025	—	3	4	—
1/2	.025	—	3	4	—
3/4	.032	—	3	—	—
1	.035	2	3	—	—

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.

STANDARD HARD EDGE

HOOK TOOTH SHAPE



Specify Hook Tooth saws for easier feeding and faster cutting in soft or gummy materials. The 10° hook on the face or cutting edge of each tooth *makes* the saw feed easier. Its chip breaker design keeps the gullet clean — prevents clogging. The main advantage of this style tooth is that it will do more work at lower cost than the conventional Skip Tooth on many applications.

HELLER SAWS WITH HOOK TOOTH

Width Inches	Thick- ness	Teeth per Inch Regular Set			
1/4	.025	—	—	4	6
3/8	.025	—	3	4	6
1/2	.025	2	3	4	6
3/4	.032	2	3	—	6
1	.035	2	3	—	6

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.

Band Saws

STANDARD HARD EDGE

STANDARD TOOTH SHAPE



Specify **Standard Tooth** saws for cutting most ferrous metals and such non-ferrous materials as hard brasses and bronzes. Well rounded gullets have ample capacity for chips developed in cutting harder materials. Also specify this tooth shape for friction sawing.

HELLER SAWS WITH STANDARD TOOTH

Width Inches	Thick- ness	Teeth per Inch							
1/4	.025	—	—	—	—	14	18	24	—
3/8	.025	—	—	10	—	14	18	—	—
1/2	.025	—	—	10	12	14	18	24	32
3/4	.025	—	8	10	—	14	18	—	—
1	.025	6	—	10	—	14	18	—	—
3/8	.032	—	8	10	—	14	18	—	—
1/2	.032	6	8	10	12	14	—	—	—
1	.035	6	8	10	—	14	—	—	—

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.

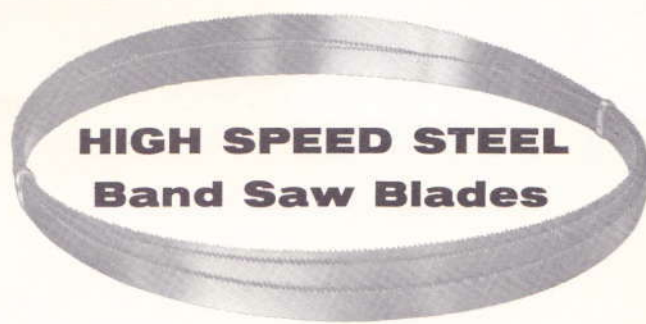
"NU-CARB" HARD EDGE SPRING TEMPER BACK

This carbon alloy type steel blade has been specially heat treated to give it a spring temper back while maintaining a full hard cutting edge. It has nearly twice the tensile strength of ordinary carbon steel blades which means you can place it under greater tension making the blade more rigid and permitting heavier feeding pressure. Costing only pennies more than a regular hard edge blade, it is available in sizes, tooth styles, spacing and set for most applications.

STOCK SAW SPECIFICATIONS

Width Inches	Thick- ness	Tooth Style	No. Teeth Per Inch	
			Regular Set	Wavy Set
1/4	.025	Standard Skip	10-12-14-18 4	—
3/8	.025	Standard Hook Skip	10-14-18 4 4	—
1/2	.025	Standard Hook Skip	6-10-14-18 4 4	14
3/4	.032	Standard	8-10-14	—
1	.032	Standard Hook Skip	6-8-10-12-14-18 3-6 3	8-10-12-14
1	.035	Standard Hook Skip	6-8-10-14 2-3 2-3	10

Furnished in 100' and 250' coils or cut to specified length and welded ready for use.



HIGH SPEED STEEL Band Saw Blades

STANDARD BLADE

Designed for production cutting of ferrous metals . . . Heller's Standard High Speed Steel Blade can be operated at faster speeds and feeds than Hard Edge type blades. Its greater resistance to wear and breakage means stepped-up production with less downtime for blade changing. Operated on heavy duty machines with back and side guides accurately aligned and not worn, this High Speed Steel Saw will give maximum on-the-job results. Furnished welded-to-length and individually packaged in all of the standard specifications listed below.

Ultra BLADE

A radically new metallurgical approach builds unbeatable durability into Heller's Ultra High Speed Steel Blade. Special steel analysis (Patent Applied For), advanced production methods, closer heat-treating control, stronger welds, 100% inspection . . . means they can be operated at much greater cutting feeds and speeds with attendant savings. Designed specifically to meet today's needs in production cut-off work on ferrous metals, these blades will give up to 3 times better performance than any other High Speed Steel blade yet costs only slightly more than our Standard High Speed Steel Blade. Furnished welded-to-length and individually packaged in all of the standard specifications listed below.

SPECIFICATIONS — REGULAR SET

Width Inches	Thick- ness	Standard Tooth				Skip Tooth	Hook Tooth			
1/2	.025	—	—	—	10	—	4	—	—	—
3/4	.032	—	6	8	10	3	—	—	3	—
1	.035	4	6	8	10	3	—	2	3	4
1 1/4	.042	—	6	—	—	3	—	—	3	—

Furnished welded-to-length, protectively packaged, ready to use.

Heller *"Job Tempered"*

FLAT
GROUND

Die Steel



SLASHES PREPARATION TIME ... CUTS TOOL MAKING COSTS

PRECISION GROUND FOR IMMEDIATE MACHINING

Heller die steel is spheroidize annealed for quick machining and uniform hardening . . . right and ready for immediate use. Precision ground to a smooth surface finish of less than 35 micro-inches . . . free from defects and decarburization.

COMPLETE RANGE OF SIZES — INDIVIDUALLY WRAPPED

Heller's Oil Hardening and Air Hardening types are available in over 1300 stock sizes in 18" and 36" lengths. Error-proof Tell-A-Type Tape identification is an extra convenience that helps build profits. Color-coded, non-marring, it always identifies the steel type at a glance. Each piece is individually wrapped for maximum protection . . . easy-to-follow heat-treating instructions on each envelope saves time, prevents waste, speeds work.

CHOICE OF OIL HARDENING OR AIR HARDENING TYPES

Heller has a flat ground die steel for every requirement. Oil Hardening, type 01 wear-resistant alloy steel for general purposes . . . Air Hardening 5% Chrome type that provides an even higher degree of wearability. Both are recommended for dies, punches, jigs, machine parts and similar applications. Where top-flight performance is a must — Heller's Air Hardening is the answer. It reacts more favorably to heat treatment . . . assures greater margins of safety.

LOW CARBON STEEL IS AVAILABLE TOO

Where heat treating is not a necessity — Heller's fine-grained, silicon-killed, Low Carbon Steel is ideal. Extremely versatile, it is easy to machine and weld.

1 OIL HARDENING

CHROMIUM-TUNGSTEN TYPE FOR GENERAL PURPOSES

A.I.S.I. or S.A.E Type No. 01 Analysis

You can safely specify this Heller non-deforming type steel for all but highly abrasive applications. This Chromium-Tungsten Type Alloy steel will give excellent wear resistance when used as tools and dies for shaping non-ferrous metals, the milder ferrous metals, and alloy steels.

APPLICATIONS

Dies	Templates
Punches	Stamps
Jigs	Shims
Gauges	Machine Parts
Fixtures	Small Tools
... And Comparable Items	

2 AIR HARDENING

5% CHROME TYPE FOR WEAR RESISTANCE

A.I.S.I. or S.A.E. Type No. A2 Analysis

Specify Heller Air Hardening Die Steel when you want greater production from punches and dies between sharpenings. You can produce up to 50% more pieces per sharpening with this 5% chrome steel than with the Oil Hardening Type. Remember, too, that Air Hardening type steels provide a greater margin of safety when hardening intricate sections and deform less in heat treatment than oil hardening types.

APPLICATIONS

PUNCHES AND DIES for shaping silicon or stainless steels, Monel metal and other abrasive metals.

GAUGES, TOOLS AND PARTS when high wear resistance is desired.



High Grade Alloy Tool Steel

SPECIFICATIONS

CHEMICAL ANALYSIS:

Carbon . . . . .	.85-.95	Chrome . . . . .	.40-.60
Manganese	1.00-1.25	Tungsten . . . .	.40-.60
Silicon . . . . .	.20-.40	Vanadium . . . .	.10-.20

SIZE TOLERANCES:

Thickness:	$\pm .001''$
Width:	$\pm .005-.000''$ (18" Lengths)
	$\pm .015-.000''$ (36" Lengths)
Length:	18" $\pm \frac{1}{32}''-0''$ (Ends milled)
	36" $\pm \frac{1}{8}''$

HARDENING RANGE:

1450° to 1500°F.—Quench in oil 125°F.
Full heat-treating instructions, including tempering chart on each package.

SURFACE FINISH:

25 to 35 micro inches with all decarburization and surface defects removed.

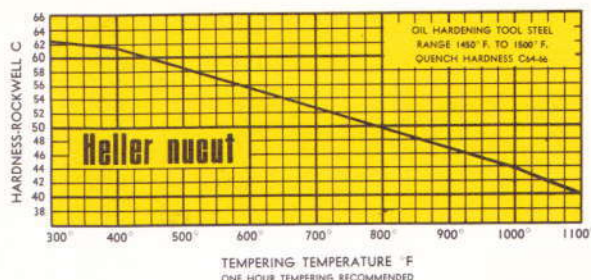
HEAT TREATMENT

HARDENING — You can satisfactorily quench all thicknesses in oil from a hardening temperature of 1450 to 1500°F.

Do not quench in water since this alloy is Oil Hardening. Be sure the stock is thoroughly and uniformly heated before quenching. Temperature of the oil quench should be about 125°F.

Commercial quenching oils are preferred, but motor engine oil SAE 20 or 30 may be safely used. To prevent fires, don't let the quenching oil get too hot. The flash point of motor engine oil SAE 20 is about 340°F.

TEMPERING CHART



For specific Rockwell hardness, use the above chart as your guide.

COLOR TEMPERING

For filing temper — heat to a very dark blue.

For grinding temper — heat to a light straw color.

ANNEALING

Heat to 1425°F for 1 hour — cool slowly in furnace to 1000°F — pack anneal recommended.

High Grade Alloy Tool Steel

SPECIFICATIONS

SIZE TOLERANCES:

Thickness:	$\pm .001''$	Width:	$\pm .015''-.000''$
Length:	36" $\pm \frac{5}{8}''$		

HARDENING RANGE:

1700° to 1800°F.—Harden at 1750°F.—Heat uniformly throughout, then soak for 15-20 minutes. Cool in still air.

Full heat-treating instructions, including tempering chart, on each package.

SURFACE FINISH:

25 to 35 micro inches with all decarburization and surface defects removed.

HEAT TREATMENT

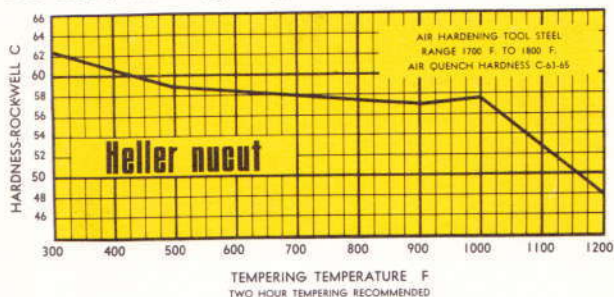
HARDENING — 1750°F is the target temperature; but 1700° to 1800°F is a safe range. Use the high side for thick sections.

Heat uniformly and soak for 15 to 20 minutes.

Cool in still air. For pack or controlled atmosphere furnace methods, no preheat is needed. For the open furnace method, use a 1450°F preheat to minimize decarburization.

TEMPERING

Refer to chart below for desired hardness. Temper for two hours. For extra toughness, temper *twice* for 1½ hours each. For light blanking, temper at 400° to 425°F. For heavy blanking, temper at 700°F.



ANNEALING

1525°F to 1575°F. For maximum softness, cool by decreasing temperature 50 degrees per hour to 800°F.

CHEMICAL ANALYSIS

Carbon . . . . .	.95-1.05	Chrome	5.00-5.50
Manganese . . . .	.50-.70	Molybdenum . . .	.90-1.10
Silicon . . . . .	.30-.50	Vanadium . . . .	.20-.30

SQUARE STOCK SIZES

OIL HARDENING 18" LENGTHS

$\frac{1}{4}$	$\frac{1}{8}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3				

OIL HARDENING 36" LENGTHS

$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3				

AIR HARDENING 36" LENGTHS

$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3				

LOW CARBON FLAT GROUND STEEL

Precision Ground • Individually Packaged • Immediate Delivery

STANDARD STOCK SIZES • FLATS AND SQUARES

1/8" EACH THICKNESS IS FURNISHED IN EVERY WIDTH IN ADJOINING COLUMNS

LENGTH 24"	
Thickness	Width
$\frac{1}{16}$	$\frac{1}{2}$ $\frac{3}{4}$
$\frac{3}{32}$	1 $1\frac{1}{4}$ $1\frac{1}{2}$
$\frac{1}{8}$	2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$
$\frac{5}{32}$	4 5 6 8
$\frac{3}{16}$	10 12
$\frac{1}{4}$	

LENGTH 24"	
Thickness	Width
$\frac{5}{16}$	$\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$
$\frac{3}{8}$	2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$
$\frac{1}{2}$	4 5 6 7 8 9 10 12
$\frac{5}{8}$	
$\frac{3}{4}$	

LENGTH 24"	
Thickness	Width
$\frac{7}{8}$	1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 5 6 7 8 9 10 12 14 16
1	
$1\frac{1}{4}$	
$1\frac{1}{2}$	
$1\frac{3}{4}$	

SQUARE SIZES

$\frac{3}{8}$	$\frac{7}{16}$	$1\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$
$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{3}{16}$
$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{9}{16}$	$1\frac{7}{8}$
2	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{7}{8}$		

SPECIAL SIZES PROMPTLY MADE TO ORDER

Easily Machined — Excellent Welding Quality — Case Harden If Heat Treatment Is Required